

## ABSTRACT

A method of pultrusion includes collating an assembly of substantially longitudinally continuous fibrous elements and a resin, pulling the elements and the resin through a die to shape the elements and to effect setting of the resin, where one of the elements is a mat specially designed to transport primarily transverse fibers into the part. The mat has a first layer containing a plurality of glass fibers which extend substantially transversely of the mat so as to be arranged in the part to provide strength to the part primarily in the transverse direction. The first layer is carried in the pultrusion process by a second layer containing a plurality of glass or polymer fibers arranged to provide shear strength to the mat. The second layer contains diagonal fibers and longitudinal fibers which may be bonded to or stitched to the first layer. The first and second layers are integrated by entangling fibers of polyester by a hydro-entangling process. A binder of PVA may be added. The mat is perforated by an array of holes to enhance resin uptake.